

Retention of Label of Leucine-U-¹⁴C in the Haemolymph of *Pila globosa* (Swainson) as a Function of Sex and Long-term Aestivation

BY

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INTRODUCTION

IN THE INDIAN APPLE snail *Pila* the biochemistry and physiology of short-term aestivation have been worked out considerably (MEENAKSHI, 1956a, 1956b, 1957, 1964; REDDY, 1965, 1967; REDDY & RAMAMURTHI, 1973). Examination of the above-mentioned aspects with reference to long-term aestivation has just commenced (CHANDRASEKHARAM *et al.*, 1979).

In this communication the rate of retention of label of injected leucine-U-¹⁴C in the haemolymph of *Pila globosa* is presented as a function of sex and long-term (25 months) aestivation.

MATERIAL AND METHODS

The method of preparation of snails for aestivation was according to KRISHNAMOORTHY (1968). The procedure with regard to injection of radio-isotope into active (= normal) and aestivated snails was described by REDDY & RAMAMURTHI (1973). Details regarding collection of haemolymph and radiometry of the same were given by CHANDRASEKHARAM *et al.* (1979).

RESULTS AND DISCUSSION

The data on 'volume-specific recovery' (VSR) of label of injected leucine-U-¹⁴C in the haemolymph of *Pila globosa* show clear sex-based differences (Table 1). The VSR of 'male' snails is considerably higher than in 'female' snails

Volume-specific recovery of label (VSR)
in the haemolymph of *Pila globosa*
injected with leucine-U-¹⁴C as a function of sex
and long-term (25 month) aestivation.¹

Condition Sex	Active (= normal) A	Aestivated E	A:E ratio
Female	245 ²	1814	100 : 740
Male	434	1055	100 : 241
F:M ratio	100 : 177	100 : 58	

¹Values are expressed as dpm. ml haemolymph⁻¹

²Values are averages of triplicate planchettings; Number of snails used for injection of isotope: ♂ A:3; ♀ A:2; E:4; Radiometry carried out on haemolymph collected from the snails 18 h post-injection (of isotope); Known volume of whole (untreated) haemolymph planchetted on stainless steel planchette and dried was used for radiometry in an end-window gas-flow proportional counter (ECIL, Hyderabad); correction made for self-absorption.

in normal (active) condition. The long-term-aestivated snails (of both sexes) show increased VSRs of label in haemolymph. These observations may suggest that in the aestivated snails, the injected isotope is not 'dissipated' from haemolymph as fast as it is in the active snails. The decrement of cardiac rhythmicity and concomitant impairment of circulatory capability CHANDRASEKHARAM *et al.* (1979) seems to explain this lessened 'isotope-dissipation' from haemolymph in aestivated snails only partially. If impairment of circulatory capability alone were to cause increased retention of label, there should have been greater retention in male *Pila* with a 65.6% reduction in cardiac rhythmicity (after 25-month aestivation-sojourn) than in the female with a 56.6% reduction of cardiac rhythmicity (CHANDRASEKHARAM *et al.*, 1979). The female snail on the

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contrary shows a considerably higher retention of label: in the female increase in VSR or retention of label is 640% in 'aestivated haemolymph' over 'normal haemolymph,' whereas in the male the increase is only 141%. It should be clear from the above consideration that, besides reduction of circulatory capability, alterations of rates of haemolymph tissue transactions (permeation) of substance are involved in producing the above-mentioned 'label retention picture' highlighting male-female contrast. Earlier (CHANDRASEKHARAM *et al.*, 1979) it has been shown that in the female, label retention from injected palmitate- $U-^{14}C$ in aestivated haemolymph shows an increase of 1303% over normal, the increase of label retention for glucose- $U-^{14}C$ is 511%. These reports provide further probaton for the concept of differential alterations of rates of permeation of substances in haemolymph-tissue transactions during aestivation in the snail.

SUMMARY

The normal (= active) female *Pila globosa* shows considerably lower retention of label in haemolymph (= volume-specific recovery of label, VSR) from injected leucine- $U-^{14}C$ than the male. After long-term (25 months) aestivation in female VSR increases by 640% in aestivated snails over normal snails; for the male the increase in VSR is only 141%.

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